

Customer No.: 31561  
Application No.: 10/707,084  
Docket No.: 10722-US-PA

**To the Drawings:**

The attached replacement sheets include changes to FIGs. 1 and 3. The replacement sheets, including FIGs. 1 and 2 and FIGs. 3 and 4, substitute for all prior versions of FIGs. 1 and 2 and FIGs. 3 and 4. More specifically, the dotted lines in FIGs. 1 and 3 are canceled so as to distinctly indicate the first protrusion portion A or C and the second protrusion portion B or D in FIGs. 1 and 3, respectively.

Attachment: Replacement Sheets (2 pages)

**REMARKS**

This is a full and timely response to the non-final Office action mailed March 19, 2008.

**Present Status of the Application**

Applicants deeply appreciate the withdrawal of the finality of the previous Office action and the entry of the submission filed on February 19, 2008 upon granting of the request for continued examination of the present application.

The current Office action rejected claims 1-5, 7-11, 14-17, 19 and 21 in the present application. Specifically, claims 1-5, 7-11, 14-17, 19 and 21 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Further, the Office action rejected under 35 U.S.C. 103(a) claims 1-5 and 10 as being unpatentable over Yanamoto (2003/0047744, hereinafter "Yanamoto") further in view of Flynn et al. (2005/0167697, hereinafter "Flynn"), rejected claims 7-9 as being unpatentable over Yanamoto in view of Flynn as applied to claim 1 and further in view of D'Evelyn et al. (2004/0124435, hereinafter "D'Evelyn '435"), and also rejected claims 11, 14-17, 19 and 21 as being unpatentable over Yanamoto in view of D'Evelyn 2004, D'Evelyn et al. (2002/0155634, hereinafter "D'Evelyn '634") and Flynn.

On the other hand, the Office action also objected to the replacement drawings filed on August 9, 2007 because the "first protrusion portion" and the "second protrusion portion" cannot be ascertained.

In response to the claim rejections, Applicants have amended claims 1 and 11 and adding to further define the present application. With entry of the said amendments, Applicants argue against the foregoing rejections for grounds as set forth in detail below.

As regards the objections to the drawings, the replacement drawings are submitted to substitute previous FIGs. 1 and 3 to rectify the insufficiencies therein.

Reconsideration and allowance of all the pending claims and drawings and the present application is most courteously requested.

**Response to Claim Rejections under 35 U.S.C. §112**

*Claims 1-5, 7-11, 14-17, 19 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.*

In response thereto, Applicants have deleted the wording “when a reversed bias is applied to the GaN-based semiconductor layer through the first electrode and the second electrode” from independent claims 1 and 11, and remained the wording “a Schottky contact is formed between the high-resistivity GaN-based interlayer and the first electrode” in claims 1 and 11 according to paragraphs [0033] and [0038] of instant application, so as to distinctly specify the subject matter of the present application as claimed in claims 1 and 11.

**Response to Claim Rejections Under 35 U.S.C. 103(a)**

*Claims 1-5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanamoto further in view of Flynn.*

*Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanamoto in view of Flynn, as applied to claim 1 above, and further in view of D'Evelyn '435.*

*Claims 11, 14-17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanamoto in view of D'Evelyn '435, D'Evelyn '634, and Flynn.*

In response thereto, Applicants have amended claims 1 and 11 by incorporating a distinguishing technical feature "a GaN-based semiconductor layer covering the entire top surface of the first protrusion portion." Upon entry of such amendments, claim 1 recites in part:

1. An UV photodetector, comprising:
  - a substrate;
  - a GaN-based semiconductor layer, disposed on the substrate and comprising a first protrusion portion having a top surface facing away from the substrate, wherein the GaN-based semiconductor layer comprises:
    - ...
    - a high-resistivity GaN-based interlayer, disposed on the first protrusion portion of the GaN-based semiconductor layer and covering the entire top surface of the first protrusion portion, and a material of the GaN-based interlayer comprising  $\text{Al}_x\text{In}_y\text{Ga}_{1-x-y}\text{N}$ , wherein  $x \geq 0$ ,  $y \geq 0$ ,  $1 \geq x + y$ ....

Only claim 1 is recited for discussion since the added feature in claim 11 recites quite similarly and repetitive recitation is thus spared. As clearly shown in FIG. 3 and claim 1 of the present application, “the high-resistivity GaN-based interlayer 303 is disposed on the first protrusion C of the GaN-based semiconductor layer 302”, and most significantly, the high-resistivity GaN-based interlayer 303 covers the entire top surface of the first protrusion portion C, wherein the top surface faces away from the substrate. On the other hand, in FIG. 8 of Yanamoto, the current strangulation layer (204) such as in FIG. 8, purportedly regarded as the high-resistivity GaN-based interlayer of the present invention, has an opening for current in a laser diode, such that the current strangulation layer (204) does not cover the entire top surface of the p-type clad layer 110, i.e. the top part of the protrusion portion, which is different from the above technical feature of claim 1. As such, the ordinary skill in the art is not taught or suggested that “the high-resistivity GaN-based interlayer covers the entire top surface of the first protrusion portion” by Yanamoto in view of Flynn et al. 2005/0167697.

Therefore, Applicants respectfully assert that the present application as claimed in the currently amended claims 1 and 11 patentably define over both Yanamoto and Flynn as neither of the references explicitly discloses or implicitly suggests the said distinguishing technical feature, thereby rendering claims 1 and 11 distinct from and novel over the cited prior art of record. It follows that Yamamoto

and Flynn, taken alone or combined with other secondary references, fail to achieve the claimed invention as claimed in the amended claims 1 and 11.

If claims 1 and 11 patently define over the prior art and are allowable, claims 2-5, 7-10, 14-17, 19 and 21 directly or indirectly depending therefrom should also be allowed as a matter of law for they each contain all the limitations of their respective base claim. In re Fine, 837 F.2d 1071 (Fed. Cir. 1988).

#### **Objections to the Drawings**

*The replacement drawings filed 8/9/2007 remain objected to because the examiner cannot ascertain where the "first protrusion portion" and the "second protrusion portion" are in the figures.*

In response thereto, Applicants have duly amended FIGs. 1 and 3 by canceling the dotted lines thereby more distinctly indicating the first protrusion portion A or C and the second protrusion portion B or D in both drawings.

Applicants submit that the objections to the drawings have been rendered moot by such rectifications.

With the above amendments and counterarguments, Applicants submit that all the pending claims and drawings have been placed in good form.

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**CONCLUSION**

For at least the foregoing reasons, it is believed that all pending claims 1-5, 7-11, 14-17, 19 and 21 are in proper condition for allowance. An action to such effect is most earnestly requested. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date :

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Respectfully submitted,

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